

WSDOT MITIGATION SITES

NORTH CENTRAL REGION

2003 MONITORING REPORT

Wetland Assessment and Monitoring Program

Monitoring Staff

Jesse Barham

Jodie Beall

Fred Bergdolt

Tony Bush

Paul Dreisbach

Cyndie Prehmus

Tuesday Shean

Bob Thomas

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For additional information about this report or the WSDOT Wetland Assessment and Monitoring Program, contact:

Washington State Department of Transportation
Environmental Services Office
P. O. Box 47332
6639 Capital Boulevard South
Tumwater, WA 98504-7732

Fred Bergdolt, Wetland Monitoring Field Coordinator
Phone: 360-570-6645
E-mail: bergdof@wsdot.wa.gov

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Executive Summary

The following table summarizes the performance criteria and monitoring results obtained in 2003.

| Site Name | Performance Criteria | 2003 Results |
|--|---|---|
| SR 20 Bonaparte Creek (Year 1/10) | | |
| | 1. > 65% survival in forested wetland | 57% survival (total count) ¹ |
| | 2. Check for girdling of plants by rodents and/or ungulates | Damage was not observed |

¹ A contingency installation of 500 additional plantings in the fall of 2003 satisfies the terms of the permit.

List of Acronyms

| Acronym | Meaning |
|---------|--|
| ECY | Washington State Department of Ecology |
| FAC | Facultative Indicator Status (Reed 1988) |
| FACW | Facultative Wetland Indicator Status (Reed 1988) |
| MP | Mile Post |
| OBL | Obligate Wetland Indicator Status (Reed 1988) |
| SR | State Route |
| USACE | United States Army Corps of Engineers |
| WSDOT | Washington State Department of Transportation |

Introduction

Background

Infrastructure improvements including highway construction projects, highway interchanges, and bridges have accompanied economic and population growth in the state of Washington. The Washington State Department of Transportation (WSDOT) routinely evaluates the potential for degradation of critical areas that result from these infrastructure improvements. WSDOT strictly complies with applicable federal, state, and local environmental regulations, including the Clean Water Act and the state “no net loss” policy for wetlands (Executive Order 89-10). Generally, mitigation sites are planned when transportation improvement projects adversely affect critical areas. The WSDOT Wetland Assessment and Monitoring Program monitors these mitigation sites as a means of evaluating compliance with permit conditions and tracking overall development. Sixty-three sites statewide were monitored in 2003. Of the 26 sites included in this year's Annual Monitoring reports, 21 have standards to be addressed in 2003, and five are provided as a requested courtesy.

Purpose

The purpose of this document is to report the status of the WSDOT North Central Region SR 20 Bonaparte Creek mitigation site with respect to permit compliance and success standards for 2003 (Map 1). We rely on feedback from the users of this report to ensure its contents are clear, concise, and meaningful.

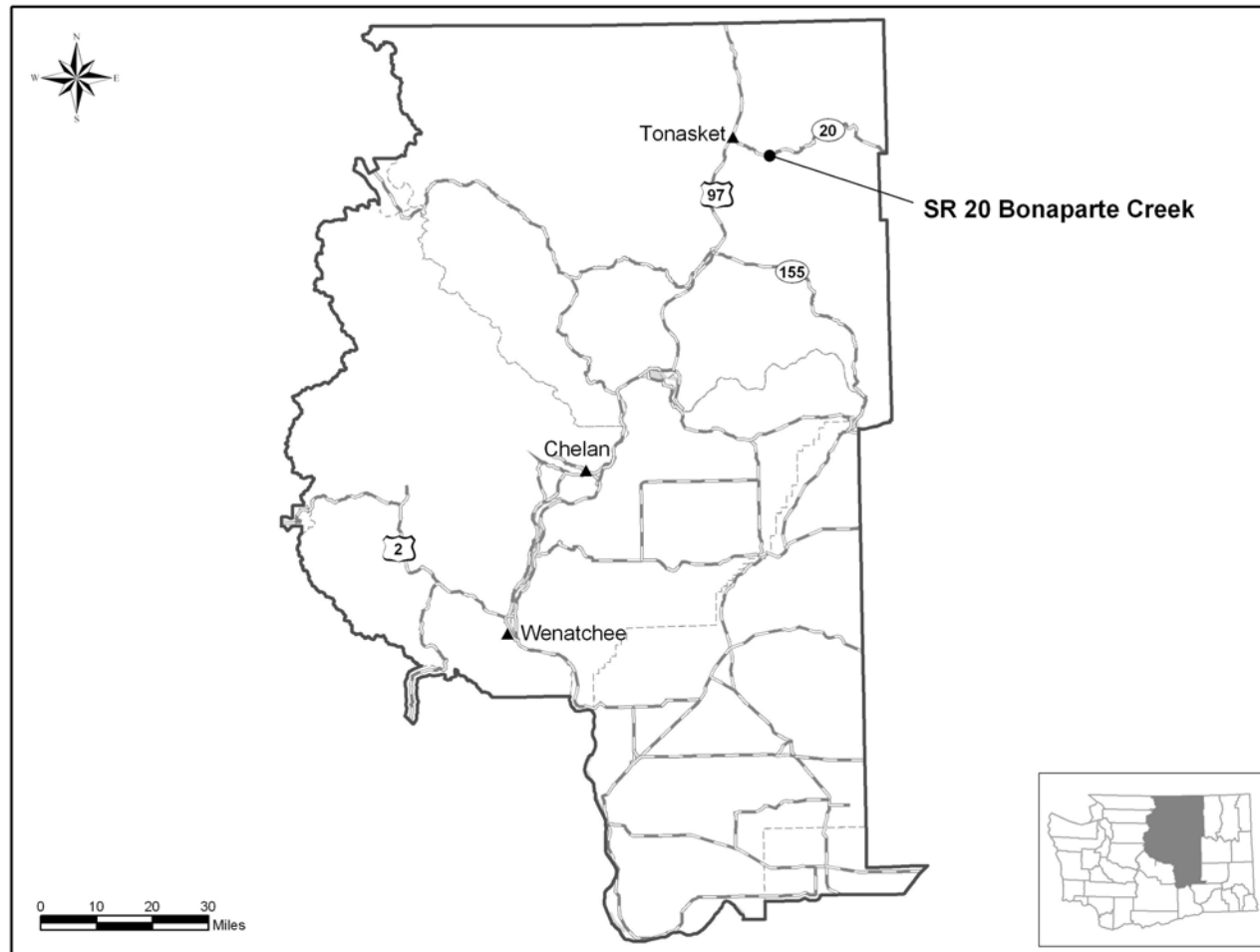
Process

Monitoring typically begins the first spring after a site is planted and continues for the time period designated by the permit or mitigation plan. The SR 20 Bonaparte Creek mitigation plan calls for a monitoring period of 10 years. In special cases sites may be monitored beyond the designated monitoring period.

Monitoring activities are driven by site-specific success standards detailed in the mitigation plan or permits. Data are collected on a variety of environmental parameters including vegetation, hydrology, and wildlife. When data analysis is complete, information on site development is communicated to region staff to facilitate management activities as part of an adaptive management process. Monitoring reports are issued to regulatory agencies and published on the web at:

www.wsdot.wa.gov/environment/wetmon/default.htm

Map 1: SR 20 Bonaparte Creek Mitigation Site



SR 20 Bonaparte Creek, Okanogan County

The following report summarizes monitoring activities completed by the Washington State Department of Transportation Wetland Assessment and Monitoring Program at the SR 20 Bonaparte Creek mitigation site in August 2003. Monitoring data were obtained to compare to the first-year success standard. Activities include survival surveys of the wetland and upland plant communities. Table 1 provides general site information and Table 2 summarizes this year's monitoring results.

Table 1. General Information for the SR 20 Bonaparte Creek Mitigation Site

| | | |
|--|---|--------------------------|
| Project Name | SR 20 Bannan Creek to Aeneas Valley Road | |
| USACE NWP Number | 1999-4-01382 | |
| Mitigation Location | North of SR 20 at MP 268.4, Okanogan County | |
| Township/Range/Section (impact) | T.37N/R.28E/S 25, 31, 32, 33, 34, 35, & 36; T.37N/R.29E/S.30, 31, & 32; T.36N/R.28E/S.2 & 3 | |
| Monitoring Period | 2003 to 2012 | |
| Year of Monitoring | 1 of 10 | |
| Area of Project Impact | 1.53 acres | |
| Type of Mitigation | Wetland Restoration/ Creation | Wetland Enhancement |
| Area of Mitigation | 1.40 acres | 0.70 acres |
| Type of Mitigation | Stream Channel Enhancement | Riparian Buffer Creation |
| Area of Mitigation | 1.30 acres | 0.80 acres |

Table 2. Monitoring Summary for the SR 20 Bonaparte Creek Mitigation Site

| Performance Criteria | 2003 Results |
|---|---|
| 1. \geq 65% survival in forested wetland | 57% survival (total count) ² |
| 2. Check for girdling of plants by rodents and/or ungulates | Damage was not observed |

Success Standards

The first-year success standard for the SR 20 Bonaparte Creek mitigation site was excerpted from the *SR 20 Bannan Creek to Aeneas Valley Road Detailed Wetland Mitigation Plan* (Haddaway and Salisbury 1999). Appendix A provides the complete text of the success standards and additional permit requirements for this project.

Success Standard

Planted woody vegetation within the palustrine forested wetland area shall achieve a survival rate of at least 65% during July or August following installation (2003).

² A contingency installation of 500 additional plantings in the fall of 2003 satisfies the terms of the permit.

Contingency

Failure to meet standards of success that are based on vegetative aerial cover or planting survival will result in the planting of additional vegetation (2003).

Permit Requirement

Check for girdling of plants by rodents and/or ungulates each monitoring year (2003).

Methods

To address survival of planted species, a total count was conducted with each individual identified and recorded as alive or dead (Success Standard 1). Empty planting wells were recorded as dead unknowns. Census results were used to determine survival percentages for the wetland and upland portions of the site.

General observations were made to address potential damage to plantings by ungulate browse and girdling (Permit Requirement).

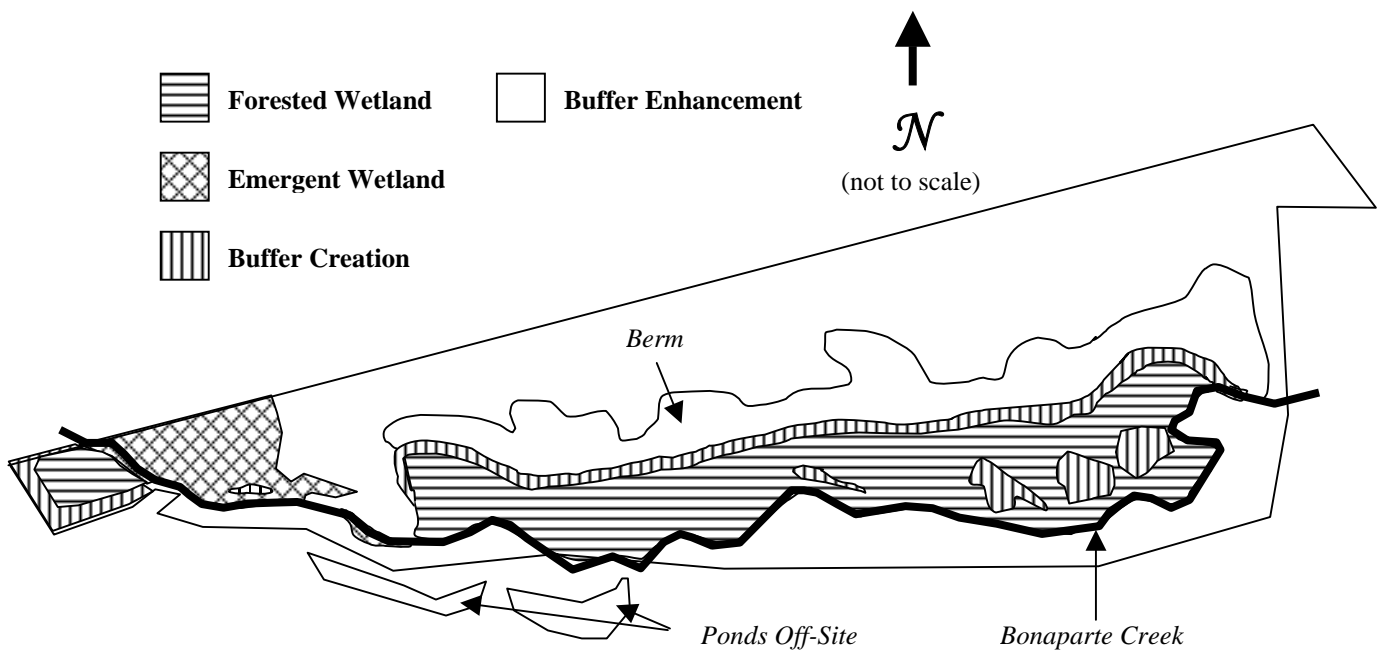


Figure 1. SR 20 Bonaparte Creek Mitigation Site Sketch (2003)

Results and Discussion

Success Standard – At Least 65% Woody Survival in the Forested Wetland Area

The survival of planted woody vegetation in the forested wetland and riparian areas was determined to be 57 percent. A total of 1911 plantings were counted, of which 1094

were alive (Table 3 and Figure 2). Three hundred thirty plants: *Salix* species (willows) and *Populus balsamifera* (black cottonwood) stakes, and native *Rosa* species (roses) were planted in the fall of 2003 to replace dead stems, thereby bringing the site into compliance with this success standard and the contingency.

Permit Requirement

A special condition in the USACE permit requires checking plantings for ungulate browse and girdling by rodents. Damage to plantings by rodents or ungulate browse was not observed.

Table 3. Survival at the SR 20 Bonaparte Creek Mitigation Site (2003)

| Scientific Name | Common Name | Alive | Dead | Total |
|-----------------------------------|------------------|-------------|------------|-------------|
| Wetland and Riparian Zones | | | | |
| <i>Betula occidentalis</i> | water birch | 11 | 0 | 11 |
| <i>Cornus sericea</i> | redosier dogwood | 227 | 8 | 235 |
| <i>Populus balsamifera</i> | black cottonwood | 122 | 0 | 122 |
| <i>Populus tremuloides</i> | quaking aspen | 5 | 1 | 6 |
| <i>Prunus virginiana</i> | choke cherry | 11 | 0 | 11 |
| <i>Ribes</i> species | current species | 102 | 20 | 122 |
| <i>Rosa</i> species | rose species | 2 | 0 | 2 |
| <i>Salix lucida</i> | Pacific willow | 97 | 2 | 99 |
| <i>Salix scouleriana</i> | Scouler's willow | 297 | 3 | 300 |
| <i>Sambucus cerulea</i> | blue elderberry | 0 | 0 | 0 |
| <i>Symphoricarpos albus</i> | snowberry | 220 | 9 | 229 |
| Unknown | | 0 | 774 | 774 |
| Total | | 1094 | 817 | 1911 |

Additional Information

Survival of plantings in the buffer area was determined to be 74 percent. Buffer plantings included *Artemisia tridentata* (big sagebrush) and *Ericameria nauseosa* (gray rabbitbrush). Naturally colonizing plants were not included in the total count, but may contribute to meeting cover requirements in future years. One hundred seventy plants were planted in the buffer in the fall of 2003 to replace dead plantings.



Figure 2. SR 20 Bonaparte Creek Mitigation Site (August 2003)

Management Activities

Ongoing monthly weed control activities focused on eradication of *Brassica rapa* (field mustard), *Cirsium arvense* (Canada thistle), *Chenopodium album* (lambsquarters), and *Lepidium perfoliatum* (clasping pepperweed). *C. arvense* was spot sprayed, while other species were hand-pulled or mowed.

Fertilizer and water were applied to stressed plantings in the summer of 2003. In the fall of 2003, 500 woody plants were installed per the contingency plan.

APPENDICES

Appendix A

SR 20 Bonaparte Creek Success Standards

The following excerpt is from the *SR 20 Bannan Creek to Aeneas Valley Road Detailed Wetland Mitigation Plan* (Haddaway and Salisbury 1999). The standard and contingency addressed this year are identified in **bold** font. Other standards will be addressed in the indicated monitoring year.

Standards of Success

Mitigation Goals and Strategies

The goal of this mitigation proposal is to replace functions impacted by the road improvement project by improving wetland, stream, and riparian functions along Bonaparte Creek. Given the extent of degradation that has occurred from grazing and agricultural practices. It is expected that the proposed activities will lead to improvements in wildlife habitat, fish habitat, native plant richness, water quality, and flood storage. Mitigation efforts on site will include fencing to exclude cattle, grading to increase flood storage, and improve conditions for desired vegetation, and planting desirable vegetation.

Mitigation Site Development not included here. See pages 9-12.

Objectives and Standards of Success

Success of the mitigation goals will be evaluated by the achievement of desired conditions on site (i.e. establishment of desired wetland functions and area, and development of desired vegetation communities). WSDOT will document the following on-site conditions as indicators that the functions presented in the Mitigation Goals and Strategies section are being performed by the mitigation site.

Objective 1:

The mitigation site will include a Category II wetland area of 0.81 ha (2.1 ac).

Standards of Success for Objective 1:

Wetland area on site will be determined after five years. Wetland area will be 0.81 ha (2.1 ac) according to criteria presented in the WSDOE Wetland Identification and Delineation Manual (WSDOE 1997). The wetland mitigation site will also meet the criteria for Category II wetland utilizing the Washington State Wetland Rating System for Eastern Washington (WSDOE 1991).

Objective 2:

Establish a forested wetland community that will provide wintering habitat for Columbian sharp-tailed grouse. Forested wetland areas will exhibit high initial survival rates and an increase of aerial cover over time.

Standards of Success for Objective 2:

Planted woody vegetation within the palustrine forested wetland area shall achieve a survival rate of at least 65% during July or August following installation; by year 3, aerial cover of planted and volunteer woody species in the palustrine forested wetland area will be at least 10%; by year 10, the aerial cover of planted and volunteer woody species will be 40%.

Objective 3:

Herbaceous communities on site will be improved by the exclusion of cattle impacts from the mitigation site. Emergent wetland vegetation should prevent erosion, and assist in the development of well defined stream banks. Upland vegetation should provide nesting habitat and forage for sharp-tailed grouse. The presence of volunteer native woody species in these areas will not be viewed as detrimental to the site.

Standards of Success for Objective 3:

~~Emergent wetland area will include less than 15% cover of noxious weeds in the fifth year of monitoring. Noxious weeds will be identified using the Okanogan County Noxious Weed List.³~~ The upland enhancement area will demonstrate an aerial cover of 70% herbaceous species in the fifth year of monitoring. This community will be comprised of at least 70% of species that are native to Washington State as measured by aerial cover. Fencing shall remain on site and be maintained in perpetuity.

Monitoring

The mitigation area will be monitored for 10 years, beginning the first year after planting is completed. It is recommended that formal monitoring procedures be performed in 3rd, 5th, 7th or 8th and 10th years following plant installation. The site should be evaluated informally the summer following plant installation to evaluate survival rates and to document the presence of any weedy species. The standard WSDOT monitoring protocol is described in Appendix 3.

Contingency Plans

Failure to meet standards of success that are based on vegetative aerial cover or planting survival (standards #2 and #3) will result in the planting of additional vegetation. Failure to meet standards of success for noxious weed cover (standard #3) will result in weed control efforts that best suit the circumstance. Failure to meet the

³ The emergent area has been planted with additional woody species, thus this standard no longer applies.

standard of success for aerial cover by native species (standard #3) will result in weed control, supplemental plantings, or a combination of these efforts to bring the mitigation site into compliance with terms of the permit.

Failure to meet standard of success #1 for establishment of minimum wetland area will result in the creation and/or enhancement of additional wetland area. This would take place within the proposed wetland mitigation site, or at a 0.7 acre site near MP 268.4 that is owned by WSDOT. This site is also adjacent to Bonaparte Creek, and contains 0.2 acres of existing wetland. Creation will likely occur through excavation and planting with native vegetation. Enhancement credit will be derived through planting native vegetation. A remedial action plan will be developed, with cooperation from permitting agencies, to most appropriately address any shortcomings of the proposed mitigation plan.

Permit Conditions:

USACE NWP 23 1999-4-01382, special condition b, p. 2: Check for girdling of plants by rodents and/or ungulates each monitoring year.

Glossary of Terms

Accuracy – the closeness of a measured or computed value to its true value.

Aerial cover - aerial cover is the percent of ground surface covered by vegetation of a particular species (or suite of species) when viewed from above (Elzinga et al. 1998). Values for aerial cover are typically obtained from point-line, point-frame, or line-intercept data.

Canopy cover – the coverage of foliage canopy (herbaceous or woody species) per unit ground area.

Density – the number of plants per unit area (typically square meters).

Herbaceous – with characteristics of an herb; an annual, biennial, or perennial plant that is leaflike in color or texture, and not woody.

Hydric soils – soils formed under the conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994).

Invasive – a plant that interferes with management objectives on a specific site at a specific point in time (Whitson et al. 2001). For monitoring purposes, invasive species include those listed on the current County Noxious Weed List, and on a site-by-site basis, other species may be included (such as *Rubus armeniacus* (Himalayan blackberry)).

Open water – an area intended to be non-vegetated and permanently inundated as described in the site mitigation or planting plan.

Shrub – a woody plant which at maturity is usually less than six meters (20 feet) tall and generally exhibits several erect, spreading, or prostrate stems and has a bushy appearance (Cowardin et al. 1979). The species categories in this report follow Cooke (1997).

Structures – any structure that is not expected to support vegetation during the monitoring period. Structures may include habitat structures, rocks, and other artifacts.

Tree – a woody plant that at maturity is usually six meters (20 feet) or more in height and generally has a single trunk, unbranched for one meter or more above ground, and more or less definite crown (Cowardin et al. 1979). The species categories in this report follow Cooke (1997).

Vegetation structure – the physical or structural description of the plant community (e.g. the relative biomass in canopy layers), generally independent of particular species composition.

Literature Cited

1. Cooke, S. S., (ed.). 1997. A Field Guide to the Common Wetland Plants of Western Washington and Northwestern Oregon. Seattle Audubon Society, Seattle, WA.
2. Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of The United States. United States Department of the Interior, Fish and Wildlife Service, Office of Biological Services, Washington, D.C.
3. Elzinga, C. L., D. W. Salzer, and J. W. Willoughby. 1998. Measuring and Monitoring Plant Populations. Bureau of Land Management Technical Reference 1730-1, BLM/RS/ST-98/005+1730. National Business Center, Denver, CO.
4. Executive Order 89-10. WSR 90-01-050. Protection of Wetlands. December 11, 1989.
5. Haddaway, B. and S. Salisbury. 1999. SR 20 Bannon Creek to Aenas Valley Road Detailed Wetland Mitigation Plan. Washington State Department of Transportation, Environmental Affairs Office, Olympia, WA. Amended Objectives and Success Standards from new Appendix 1.
6. Reed, P. B. 1988. National List of Plant Species that Occur in Wetlands: Northwest (Region 9). United States Department of the Interior, Fish and Wildlife Service. Biological Report 88 (26.9).
7. United States Army Corps of Engineers. 1999. Department of the Army Nationwide Permit 1999-4-01382. Seattle, WA.
8. Washington State Department of Ecology. 1991. Washington State Wetlands Rating System for Eastern Washington. Publication #91-95. 58 pp. Olympia, WA.
9. Washington State Department of Ecology. 1997. Washington State Wetlands Identification and Delineation Manual. Ecology Publication No. 96-94. Olympia, WA.
10. Whitson, T. D. 2001. Weeds of the West, 9th edition. Grand Teton Lithography, Jackson, WY.